CLAIMS

1. A process comprising:

while implanting a first wafer, determining the rate at which ions are implanted;

while implanting the first wafer, determining the pressure;

using pressure changes and a pressure compensation factor to estimate the rate at which neutral atoms are implanted;

selecting a modified pressure compensation factor that would have achieved a uniform rate of implanted ions plus implanted neutral atoms across a surface of the first wafer; and

using the modified pressure compensation factor to implant a second wafer.

2. A process according to claim 1, wherein ions are implanted in the first wafer using a pressure compensation factor different from the modified pressure compensation factor.

3. A process according to claim 2, further comprising moving the first wafer radially with respect to an ion beam while implanting ions into the first wafer so as to achieve a uniform total dose based on the rate at which ions are implanted and the estimated rate at which neutral atoms are implanted.

4. A process according to claim 1, wherein the first and second wafers are implanted with ions in an Axelis GSD platform implanter.

5. A process according to claim 1, further comprising testing the second wafer by forming a sheet resistance contour map.

6. A process according to claim 5, further comprising using the modified pressure compensation factor to implant wafers subsequent to the second wafer if the sheet resistant contour map shows uniform resistance across the wafer.

7. A process according to claim 1, wherein the following equation is used to estimate the rate at which neutral ions are implanted:

$$I_{MEASURED} = I_{DOSE} \cdot e^{-kp}$$

where $I_{MEASURED}$ is the rate at which ions are implanted, I_{DOSE} is the sum of the rate at which ions are implanted and the estimated rate at which neutral atoms are implanted, K is a pressure compensation factor and P is the pressure.

8. A process according to claim 7, further comprising:

selecting a parameter P-COMP, which relates to the pressure compensation factor K according to the following equation:

$$K = \ln(1 + \frac{P - COMP}{100})(10000) \ .$$

9. A process comprising:

using pressure changes and a pressure compensation factor to estimate the rate at which neutral atoms are implanted;

while implanting a first wafer using a first pressure compensation factor, determining the rate at which ions are implanted;

moving the first wafer radially with respect to an ion beam while implanting ions into the first wafer so as to achieve a uniform total dose based on the rate at which ions are implanted and the estimated rate at which neutral atoms are implanted;

while implanting the first wafer, determining the pressure;

selecting a second pressure compensation factor, that would have achieved a uniform rate of implanted ions plus implanted neutral atoms across a surface of the first wafer, the second pressure compensation factor being different from the first pressure compensation factor;

using the second pressure compensation factor to implant a second wafer;

testing the second wafer by forming a sheet resistance contour map; and

using the second pressure compensation factor to implant wafers subsequent to the second wafer if the sheet resistant contour map shows uniform resistance across the wafer.